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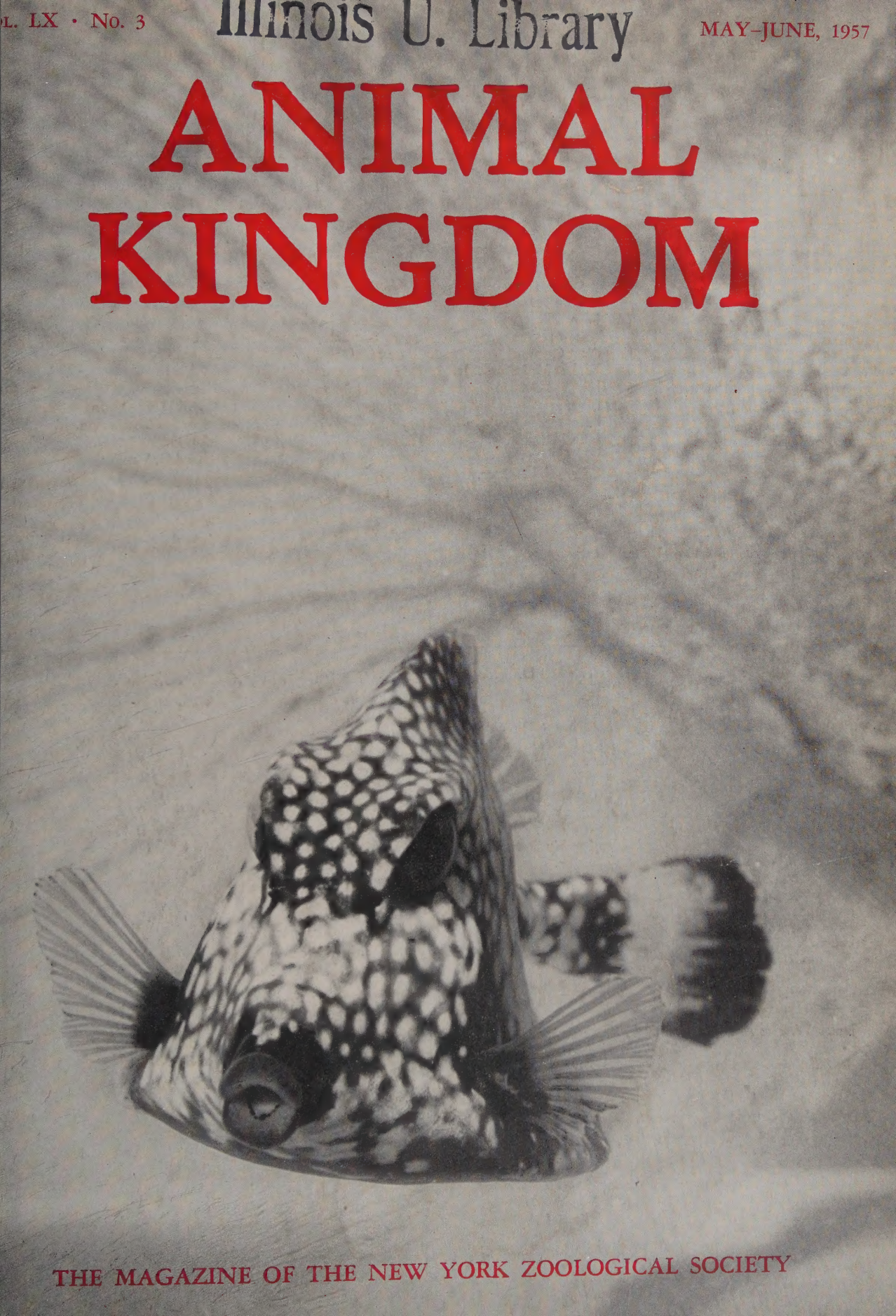
ANIMAL KINGDOM



THE MAGAZINE OF THE NEW YORK ZOOLOGICAL SOCIETY

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ANIMAL KINGDOM

Bulletin of the New York Zoological Society

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The New Aquarium

THERE HAS BEEN A VOID in the life of this great city and it is being filled now. Years of planning lie behind, years of growth lie ahead – but, with the opening of this first unit of the incomparable institution-to-be, we are really on our way.

How can one define the significance of an institution such as this? A ready answer is that of all the wonders on this earth none is so mysterious as the life within the oceans and under the dark surfaces of rivers and lakes. Yet this is only part of the answer, for the more evident truth is that most of us Americans have become city-dwellers and yet we have a continuing and innate craving to observe and enjoy the living things of Nature. So it is that each year more than 60 million people go to the well-established zoos, now to be found in most of our larger cities. However, good public aquariums that really do justice to the wonders of marine life are a rarity in the United States, only a handful being worthy of the name. This fact makes the new Aquarium in our country's largest city all the more desirable. It also emphasizes the need for its ultimate completion.

Plans for the final Aquarium represent an institution of such beauty, interest and educational value that it will stand unchallenged as the most notable center of public interest of its kind in this country or, indeed, in the world. We must hope that the First Stage, opened for public enjoyment on June 6th, will prove the steppingstone towards the realization of a completed institution worthy of New York.

Fairfield Osborn

THE AQUARIUM WILL BE BORN AGAIN ON JUNE 5

By WILLIAM BRIDGES

AT THIS LATE DATE in New York City's history it is rare for a new institution to come into being. The pattern of the city's cultural interests was rounded out long ago and there will not be many opportunities for future generations to boast of remembering the day when a major Museum, or Botanical Garden, or Zoological Park, or Aquarium was dedicated and opened to the public.

The dedication of Stage One of the new Aquarium at Coney Island on June 5 is, consequently, a historic event. It is true that it is a rebirth rather than a "first beginning," but the Aquarium that is about to reopen bears very little resemblance to itself in its previous homes – the old converted fortress at the Battery and the Lion House in the Bronx Zoo where it has existed as an interim exhibition for the past 15 years.

The New York Aquarium as a legal and physical entity dates from December 10, 1896, when the City through the Department of Public Parks (as the Department of Parks was then called)

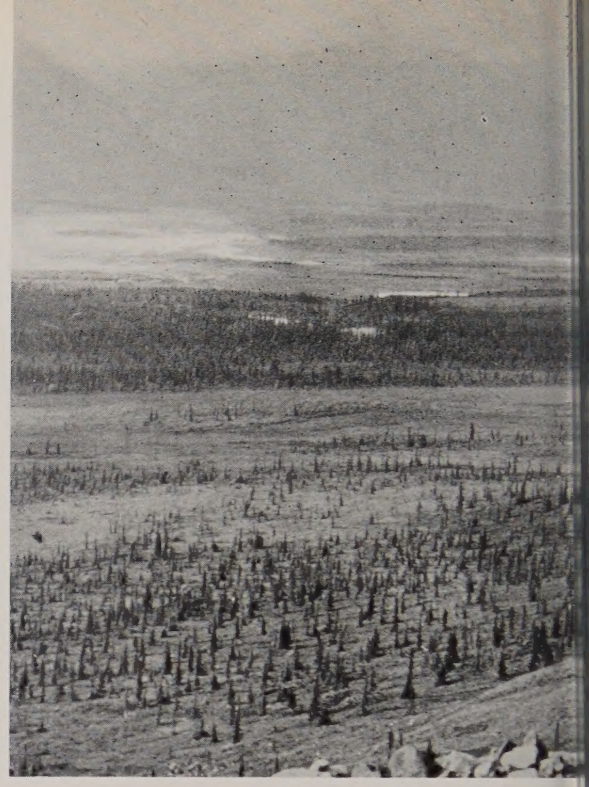
Brightly colored fishes of the coral reefs are the "specialty" of the new Aquarium on the ocean front at Coney Island. This is one of the tanks that simulate a reef and its varied life.

formally opened the doors of the old Castle Garden and invited the citizens to come in and look at a collection of fishes. On October 31, 1902, the City transferred the management of the institution to the young New York Zoological Society that was making such a success with the new Zoo up in the Bronx wilderness. In this ever-changing city it is interesting to note that Prof. Henry Fairfield Osborn, as President of the Zoological Society, made the acceptance speech for the Society. On June 5 Fairfield Osborn, his son and today's President of the Society, will preside at the dedication of the new building.

The old Aquarium at the Battery became one of the great Aquariums of the world but it was always uphill work to make and maintain its collections; a circular ex-fortress with walls of red sandstone eight feet thick imposed limitations that could not be overcome. Among the operating personnel, therefore, there was not too much regret when the old Aquarium was closed on October 1, 1941, with the promise of a shining new home designed for the specific purpose of exhibiting fishes and invertebrates and aquatic mammals and birds. A new home there *had* to be if the Aquarium were to grow with the times.

Part of the temperate and tropical freshwater collections were moved into tanks set along the west wall of the Lion House in the Zoological Park; the staff moved into its temporary home and began planning the Aquarium of its dreams. That it has taken so long to turn those dreams into reality is regrettable, but there have been many good reasons for the delay. The complete, enormous, $10,000,000 Aquarium as planned is still to come, but Stage One is finished; the beginning has been made. Essentially it is a new institution and June 5, 1957, is a historic day.

THE GRIZZLY BEAR & THE WILDERNESS



We guessed we would have much to do with Grizzly Bears that summer. On the day the bush plane landed the second contingent of our party at Lobo Lake, at the entrance to the Brooks Range of Alaska, we saw two bears out on the tundra. And in the weeks that followed, when the five of us were exploring up the Sheenjek River to study the ecologic and wilderness values of the east end of the Brooks Range on behalf of the New York Zoological Society and The Conservation Foundation, we were to meet with the Grizzly itself at rather long intervals, and the signs of its presence always.

Our friend, Dr. Donald MacLeod of Jackson Hole, had come up to visit us for a couple of weeks. One day he and I went west of the Sheenjek River and late in the day climbed into a pass behind what we had called First Mountain. And there, below a distant ridge, we spied a Grizzly, lying down on a gravelly slope. We both carried small kodachrome cameras, and Don also had an 8 mm. movie camera. But the bear was out there in the open, on a bare hillside. How could we ap-

Grizzly Bears roam the Sheenjek River valley in the Brooks Range of Alaska. Here the author spent the summer of 1956 to observe the animals and the ecology of the wilderness.

Photographs by the author unless otherwise credited

By OLAUS J. MURIE

President of The Wilderness Society

proach him? We knew that Bob Krear was up on that mountain somewhere, and we wondered if he might not come down that same ridge.

A few moments later Bob appeared on the skyline. We waved at him, and even at that great distance caught his attention and frantically pointed over toward the bear. We learned later that Bob had already seen the bear, and had begun to approach him for pictures.

Bob was moving cautiously down the slope, but the bear suddenly saw him, jumped to his feet, and came toward him at full speed. With remarkable presence of mind, Bob ran at *his* full speed to one side, in order to get the bear downwind and give him his scent. It at once became a race, the bear for Bob, and Bob for the windward goal. And Bob made it first. At about fifteen yards' distance, the bear suddenly put on all his foot-brakes. He had got the scent. He reversed himself with a great "Whoosh!" and went pell-mell down the mountainside, straight for Don and me. But he saw us, in time, realized that the landscape was full of *Homo sapiens*, and veered off and disappeared over a ridge at full speed. Cameras were snapping, but in the excitement none of us got a decent focus.

A similar experience with the Alaskan Brown Bear years ago in southern Alaska, when I was also seeking pictures, made me sympathize with Bob's feelings. They usually result in violent nervous trembling all over the body when the crisis is past!

There have been many close calls and some fatalities in man's contact with the Grizzly through the years and it behooves us to try to understand them. Some years ago a man with torn scalp and wounds in one arm told me of his experience near Mt. McKinley National Park. There was snow on the ground in late fall and he and a companion had wounded a Grizzly. A little later they decided to follow the tracks. My informant was in the lead, on snowshoes, with mittens on his hands, and his gun on his shoulder. In that condition he led the way into thick brush after a wounded Grizzly!

Suddenly the wounded animal arose right in front of him. With lacerations on head and arms, the man fell backwards and swung his snowshoes up in the air. The bear promptly smashed the snowshoes with his paws. By this time the hunter's companion got his gun into action and killed the bear. Obviously, in this case the man asked for it, and got it.

Hunters are still being injured and killed in encounters with Grizzlies. It is significant that the Izaak Walton League chapter at Anchorage, Alaska, has made a campaign against hunting from airplanes and such unsportsmanlike methods of bear hunting as bombing a bear out of its den. Too many people, with complete reliance on their guns and equally complete ignorance of fact, like to shoot a bear at close range. A fatally wounded bear will often run twenty yards or more and can do terrific damage before falling. Years ago I shot a number of Grizzlies and Brown Bears for the National Museum. I always shot at some distance, and I learned never to be

ABOVE — The Grizzly leaves unmistakable signs of his passing; here a bear has excavated the burrow of a Ground Squirrel. RIGHT — Ground Squirrels are sought for food by the Grizzly, Red Fox and Lynx, and in some parts of Alaska the Eskimos cure skins for parkai.

downhill, under a bear, for in his final rush the animal will go downhill.

But how about the times when you are not out to kill a bear? Things can happen then, too, for almost anyone will admit that the Grizzly is a powerful beast, is impulsive, and can be dangerous. But one important precaution can be taken: *Try to let the bear know what you are.* The bear's eyesight is not very keen, but it has a very good nose. Oldtime Alaskans, who knew their way around, when travelling through brushy or wooded bear country would bang on a pan occasionally, to wake up any stray bear and let it know that someone was there. One time when I was letting our empty canoe down the shallow waters and riffles of a stream in Yellowstone National Park, Mrs. Murie was walking down a trail parallel to the stream. We knew there were Grizzlies in that area, and she kept whistling and singing, no doubt in memory of similar experiences in Alaska.

Like all other wild animals, Grizzlies do surprising things. One day in Mt. McKinley National Park I found a Grizzly mother with two cubs, low on a slope, digging out a Ground Squirrel. I carefully approached with the camera and got down fairly close, with only a ravine between us. When I snapped the Graflex, she heard the sound and looked across at me. Leaving her cubs behind, she immediately ran up the high slope and disappeared over the ridge. I whined like a cub in distress, for her flight emboldened me for a try at another picture. At the sounds, she reappeared on the ridge top and looked down in my direction, then disappeared again. The two cubs were left to make their way up the steep slope on their own.

On another occasion some hunters had managed, somehow, to capture a Grizzly cub alive and the mother ran away. Because they wanted to shoot the mother, the hunters pinched and hurt the cub to make him squeal, but in spite of the cub's outcries she never returned.

A few years ago in Mt. McKinley National Park, three of us were climbing high up on Sable Mountain. Presently a small band of Mountain Sheep came toward us along a ridge. With a telephoto lens on a 35 mm. camera I took several pictures. The sheep paused on the slope above us and I decided to take one more picture. While I was getting the focus, peering through the finder, I was startled to see a Grizzly Bear walking into the picture. When he was just below

the sheep, I did have the presence of mind to press the shutter. The sheep calmly went about feeding, and the bear walked on, apparently oblivious of what was in the landscape, and went over the ridge into the valley beyond.

During our sojourn last summer in the Brooks Range we wanted to learn how the Grizzly lives in this farthest north range. Of course, we know that Black Bears and Grizzlies, including the so-called Alaskan Brown Bears, are chiefly vegetarians, despite their fierce canine teeth and powerful front legs. Nevertheless they overlook no chance to eat fish, carrion and any other meat they can find. Referring to the more southern Alaskan Brown Bears, someone remarked, "They graze like cattle." During the summer I collected droppings of Grizzly, Wolf, Red Fox and Lynx, as part of our effort to understand the ecological relations of the animal life in this precious wilderness of the Arctic.

Everywhere we went we saw the diggings where the Grizzly had excavated for roots, which here constituted the number one item in its diet. Only second to this were the green sedges and grasses. In the proper season all kinds of bears everywhere, like the human inhabitants, enjoy berries. In the Brooks Range these were blueberries and buffalo berries mostly, and some alpine bearberry. However, in more southern areas apparently the green plants form the preferred item and roots are second. This would appear to be logical considering the short growing season in the Brooks Range—a clear adaptation to climatic factors.

Of course the bears get an occasional Moose or Caribou calf, some young birds and occasionally the eggs of birds like the Ptarmigan, and the remains of animals killed by Wolves. But there is one habit common to bears everywhere. Here in the Brooks Range, too, the bears had the habit of digging out the dens of Ground Squirrels. They cannot catch these little animals in the open, but with their powerful paws they can roll out rocks, sometimes of enormous size, and dig down to

Caribou on the east fork of the Chandalar River. Dr. Murie believes the area contains as many Caribou as it should hold, for there is a striking scarcity of the lichens the animals eat.

Photograph by George Shaller

where the Ground Squirrel lives. In coastal areas bears have an opportunity to catch many migrating salmon, but in the Brooks Range, where they do not have this kind of opportunity, fish are only an occasional part of their diet. In only four instances had Grizzlies fed on Grayling. Nor do they find ants or as many bees and wasps as they do further south.

A collection of 137 fox droppings gave us an idea of the food habits of this smaller inhabitant of the Grizzly's Arctic world. Although he will occasionally eat a bit of grass, as the Coyote and the dog will do, he is a true carnivore, living chiefly on Ground Squirrels, mice and Ptarmigan. Like the bear, the fox will now and then find a young bird or eggs, Muskrat and the like.

The Lynx also had similar habits, feeding largely on Ground Squirrels and Ptarmigan and somewhat fewer mice. It should be stressed here that at the time of our study, the summer of 1956, the Snowshoe Rabbit population was at the low point in its cycle. In the years when those rabbits are more numerous, rabbit is an important item in the diet of both the fox and the Lynx.

But when we come to the Wolf we find a different story, and an important ecological coordination among all these carnivores. I found only 41 Wolf droppings, but these, together with our observations, showed that the Wolf diet is mainly Caribou – 38 of the 41 samples. The Wolf will get an occasional Ptarmigan or Ground Squirrel.

Here is a principle which may be of some importance in the economy of these carnivores. We do not know how long a Caribou furnishes food for Wolves. When I was driving dogs some years ago we used to have in mind that a large husky dog would eat about ten pounds of Caribou per day, and Caribou will average 150 to 200 pounds; that is, those animals the Wolf is likely to kill. But before a Caribou is consumed a Grizzly Bear may find a carcass temporarily abandoned. There were at least 19 such instances in the 125 Grizzly dropping samples I collected. The fox apparently is even more alert to this sort of carrion windfall, for out of 137 fox scats collected, such Caribou carrion left by wolves was eaten at least 28 times.

This picture of a Grizzly female and her cub happened to be made in the Mt. McKinley National Park, but similar scenes can be observed in the vast, wild Sheenjek River Valley.

Photograph by Adolph Murie

A Grizzly Bear slept here. This is the hibernation den of one of the big mammals, scooped out of the hard earth on a mountainside in the Brooks Range as a snug harbor for his winter's sleep.

Photograph by Robert Krear

The Lynx had the same habit. Of 23 scats, 12 showed remains of Caribou. This source of food, furnished by the Wolf, must have been most welcome to both the fox and the Lynx in such a time of rabbit scarcity.

And what of the Caribou, which through the Wolf furnished this cooperative food supply? We carefully looked over this range and there was a striking scarcity of the lichens of the species Caribou enjoy. The herds were constantly on the move, thus conserving the food supply, I am convinced. It would seem that the area contained as many Caribou as it should hold. And the observations of students of Wolf habits agree that the Wolf, on the average, will pick off the lame and otherwise slow or disabled animals.

It has been generally known for a long time that the Arctic Fox on the ice of the Arctic Ocean will glean considerable food by alertly watching for the remnants of carrion left by the more carnivorous Polar Bear. Here in the Brooks Range we found a similar sort of partial "commensalism," contributing to the lives of the Red Fox, Lynx and Grizzly Bear. The benefactors in this kind of ecological arrangement are the Wolf and the Caribou.

What of the future of these animals? In a pamphlet published by the National Wildlife Federation, Robert Cooney declared that our hope of preserving the Grizzly Bear lies in our wilderness areas. More recently Dr. John Craighead of the University of Montana said the same thing. There can be no doubt about this.

As for the Wolf and the Caribou, there again we must rely on wild country. Moreover, we must begin to realize that such animals as the Caribou require food – and that we must have better understanding of range requirements. The Wolf is a persecuted animal which is being pushed off our continent, slowly, by traditional hatred. Wild country and a better understanding of ecology are our hope.

Our summer's work in the Brooks Range, especially on the Grizzly Bear and his carnivore associates and on the Caribou and the plant growth, demonstrates clearly one of the great values of such areas of wilderness. Here the scientist, especially the ecologist, be he professional or amateur, has the opportunity to study the interrelationships of plants and animals, to see how Nature proceeds with evolutionary processes. Add to this the opportunity for all who are sensitive to natural beauty, who like to see the Caribou, the Fox and Ground Squirrel, and perhaps a glimpse of a Wolf, in their own unmodified world. These places will be precious not only to us, but even more so to the people of the future – if we can hold the wild country for them.

THE FRIENDLY BICOLORED ANTBIRD

By ALEXANDER F. SKUTCH
San Isidro del General, Costa Rica
Illustrated by DON RICHARD ECKELBERRY

YOU MAY WANDER far through tropical forest, meeting only here and there a solitary bird. Just as you begin to suspect that the accounts you have read of the splendor and variety of tropical bird life were greatly exaggerated, your attention may be drawn by a chorus of small voices somewhere in the distance. Following the sounds, you come in view of winged figures flitting through the shrubs, low palms and ferns of the dimly lighted undergrowth. It seems that a large share of the feathered inhabitants of the surrounding forest have congregated in this one spot. Most wear subdued colors — browns, olives and grays — which blend with the bark of trees and the dead leaves on the ground. Some perch on low twigs, others grasp slender upright stems, yet others cling woodpecker-like to thick trunks. From time to time they dart rapidly back and forth, or drop momentarily to the ground.

The excited feathered crowd sends forth a medley of churrs, cheeps, rattles, whistles and trills, and in intervals of relative silence the keen ear may detect a low, rustling sound, made by countless tiny feet pattering upon fallen leaves. Looking down, one sees that the ground beneath the birds is covered with swarming ants — dull brown, sightless army ants. As the hunting ants push beneath fallen leaves and file up the trunks of trees, all the small creatures that hide in such places make a dash for safety. Crickets, roaches, moths, centipedes, spiders, an occasional small frog, lizard or snake, rush forth from concealment, and many which escape the ants are snatched up by the attendant birds. It is the ease of finding food above the foraging army that has brought together this motley crowd of feathered creatures.

e Bicolored Antbird is a voluble and friendly fol-ver of the columns of army ants. Typically it is und within a yard of the ground, clinging to verti-l stems rather than perching on horizontal twigs.

Conspicuous among the followers of the army ants in the lowland forests of southern Central America is a bird about the size of a sparrow, clad in rich chestnut-brown upper plumage, with a broad, somewhat irregular band of white along the central under parts from the chin to the abdomen. Each large, dark eye is set in an area of bright blue bare skin, below and behind which the cheeks and ear-coverts are black. It stays within a yard of the ground, clinging to slender vertical stems in preference to horizontal twigs. By stretching out the upper and flexing the lower of its bluish-gray legs, it manages to hold its body almost upright despite its peculiar manner of perching. Whenever its keen eyes espy some small invertebrate desperately trying to escape the ants, it darts down and seizes the fugitive, returning in a trice to an erect stem with the victim in its blackish bill. It is a voluble bird, constantly repeating its half-whimsical, half-mocking call, which consists of a series of little clear notes rising in pitch toward the end: *we we we we we we we wheer.* Or sometimes two or three notes falling in pitch terminate the series — this call has many variations. Often three or four, and sometimes as many as six or seven, of these attractive birds gather about a swarm of ants, with many associates of other species.

As I walked through the forest on my farm in Costa Rica, one cloudy morning in February about fourteen years ago, I noticed a lone Bicolored Antbird in the undergrowth close beside

the trail, and it stayed so persistently in one spot that I was led to look for its nest. I searched the more eagerly because I had never seen the nest of this species, although I had hunted much for it in forests where the bird is fairly abundant. While I peered into the hollow center of a palm stump and scrutinized the crevices between its crowded prop-roots, the antbird appeared to be examining me from the bushes only a few feet away. But I found no nest. As I began to walk away, the antbird followed me. Moving slowly and watching it out of the corner of an eye, I saw that it was snatching up the insects driven from the fallen leaves by my passage. Taking care to shake the ground litter and to avoid abrupt movements, I led it through the undergrowth for nearly a hundred yards, a leisurely journey on which it was rewarded by many small creatures that it ate. Clearly it was using me in lieu of army ants to stir up the insects so difficult to find as they lurk motionless beneath fallen leaves with whose color they blend.

This was the first of many similar excursions that the antbird and I took together. As we became intimate, I needed a name for my little woodland friend, and "Jimmy," short for *Gymnopithys bicolor,* seemed as good as another. As we walked together through the forest, I would repeat this name in order to accustom him to my voice. But I was doubtful as to the appropriateness of this masculine appellation, for the sexes of the Bicolored Antbird look very much alike, and "Jimmy" might well have been a female.

Sometimes as I walked through the woodland near the house I found Jimmy, but far more often he found me. While I stood watching some other bird he might apprise me of his presence by a low, questioning note, and looking down I would see him clinging to an upright stem, a foot from the ground and hardly a yard away. Often he would wait patiently close by me, perhaps preening his feathers, until I finished my observation of the other bird. Then, if I could spare the time, we would begin the leisurely journey which he liked, for he would not try to keep up if I walked fast. Frequently I used a stick instead of my shoes to stir up the ground litter. Whenever a suitable morsel was exposed, Jimmy would dart up and seize it with a *clack* of his bill. He had definite preferences and paid no attention to certain insects which to me looked just as appetizing as those which he eagerly devoured. Among the creatures he disdained were certain moths, although he ate other kinds of moths. In the wet season he varied his diet with small frogs, an inch or less in length, which he beat against his perch before he swallowed them. If he saw an escaping insect dive beneath fallen leaves, he would alight on a low twig or the ground and flick them aside with rapid sideways movements of his bill, just as ant-thrushes, antpittas and many other ground-feeding birds do. Sometimes while seeking a fugitive he would fall some yards behind me, but soon a rapid flight, low above the ground, would bring him to my side again. Or if I delayed too long in one spot, he would remind me of his presence by repeating his low, throaty note while clinging to a sapling close beside me.

In the breeding season Jimmy sometimes followed me while I searched for birds' nests to study, but these trips were more profitable to him than to me, for they provided many insects for him and rarely a nest for me. At times our journeys together lasted an hour or more, and once we went an estimated half-mile, which seems a long distance in the forest. This must have taken Jimmy far beyond his home area. Although he refused to follow when I returned along a little-used wood road, he apparently had no difficulty in finding his way home, and a few weeks later I met him in the part of the forest where he lived.

He could not be enticed beyond the border of the heavy woodland into the brighter light of neighboring second-growth thickets or pastures, although here I might have chased up fat grasshoppers for him. Although he picked up insects at my feet, he always flitted away when my advancing hand was a few inches from him and never permitted me to touch him. Yet he did not object when I ruffled his feathers with the end of a short stick. After he had become thoroughly accustomed to me, I tested his reactions to noises and found him unmoved by my loudest clapping or shouting. Nor was he alarmed when I shook the sapling to which he clung. He was not estranged by a long separation, and after an interval of several months in which we did not meet he would come to me as though our last meeting had been yesterday. No other free bird has ever been so intimate with me.

Since I had neither known nor heard of any other Bicolored Antbird or bird of any kind which followed men through the woodland, I concluded that Jimmy was an original genius who had discovered that featherless bipeds may be utilized as purveyors of food, just as Cattle Egrets and anis use cows, horses and other grazing animals to stir up insects and in the East certain hornbills are said to employ arboreal monkeys. My walks with Jimmy extended over a period of sixteen months, after which for nearly three years I could induce no antbird to follow me. I missed his quiet companionship on my solitary woodland walks.

Then one day a Bicolored Antbird followed me much as Jimmy had done. Considering the long period when no antbird had accompanied me, I concluded that this was a different individual, perhaps a descendant who had inherited Jimmy's peculiar trait. Hence I called him "Jameson." In subsequent years, I have from time to time been followed through the forest near our house by Bicolored Antbirds and sometimes by two together, apparently a mated pair. It is possible that Jimmy started a custom which has been spreading through the local population; but we should need to know far more about the habits of the species in other parts of its range before passing final judgment on this surmise. Sometimes young Bicolored Antbirds, easily recognized by their darker under plumage and the yellow corners of their mouths, have come almost within arm's length and even followed me for short distances, but they could never be induced to take a longer trip and catch the insects I stirred up, perhaps because they still received food from their parents, who were near by. They were either curious or simply friendly.

At times, especially in June, the antbirds who followed me, instead of eating at once the food they caught, would carry it off through the underwood, suggesting that they were feeding young. To my great disappointment, I never succeeded in following them to their nest, if nest they had. But as I passed along an indistinct trail in the forest near our house in mid-August, a Bicolored Antbird clung to a stem close beside me with a fat insect in its bill, repeating over and over a low, scolding *churr*. This led me to begin a search through the undergrowth, and as I moved about the bird darted so close to me that its wing brushed my leg. Then it dropped to the ground, grovelling and beating its half-spread wings, in an excellent distraction display. It "feigned injury" repeatedly in various spots only a yard or two from my feet.

Finally I discovered two nestlings lying close together on the ground, as though they had been tumbled there. They seemed to be about five or six days old, for they bore long, lead-colored pinfeathers and their eyes were already open. They had great, white flanges at the corners of their mouths. They were cold and sluggish in their movements, and one had fresh blood on its flank.

A little more searching disclosed whence they had come. Near by was the stump of what had been a tall feather-palm. It was only about six inches high, and all the central part had decayed away, leaving a deep hollow surrounded by a papery shell. The frail stump had somehow collapsed, spilling nest and nestlings onto a palm frond that lay close beside it. The nest had consisted of large pieces of partly decayed palm leaf, forming a thin mat, above which was a lining of coarse fibrous roots and similar materials.

While I examined the remains of the ill-fated nest, the parent behaved in most extraordinary fashion. It gulped down with an effort the fat insect it had been holding and with empty bill incessantly repeated a somewhat churred *per-r-r-r,* at once plaintive and protesting. Several times more it grovelled on the ground in front of me, beating its wings in an effort to lure me away from the nestlings. When I held them in front of the parent in the palm of my hand, it advanced and bit a finger three or four times, but not hard enough to hurt. With the exception of a female Slaty Antshrike, who nipped the finger I placed on her nest while her mate "feigned injury" on the ground to lure me away, no other forest bird has ever dared to attack me. Spreading a handkerchief on the fallen leaves, I placed the torpid nestlings on it while I arranged a new home for them. The parent lay or sat on the ground facing the handkerchief with its youngsters and remained motionless, watching or guarding them, for the ten minutes or so that I left them on the leaves.

After I had improvised a sort of nest in the hollow sheath of a palm frond, I placed the nestlings

in it while the antbird intently watched me. Then I went away, confident that so devoted a parent would not neglect its little ones. But when I returned next morning they were both dead, one in the palm sheath, the other lying on the ground close by it.

After this, I looked into every hollow palm stump that I found, and also into the long, almost cylindrical sheathing bases of great fallen palm fronds, for Dr. Josselyn Van Tyne had a short while before published an account of the discovery of a Bicolored Antbird's nest in a similar situation in Panamá. The following May, not far from the point where I had found the fallen nestlings, I peered into a low palm stump to behold a Bicolored Antbird sitting in it and returning my gaze. It stared up at me for nearly a minute, then jumped out and "feigned injury" on the ground close in front of me. Its departure revealed two creamy eggs, thickly marked with elongate blotches of rufous-chocolate, which lay on a nest composed of a double handful of leaf fragments, with a thin lining of rootlets and other fibrous materials. The stump, about ten inches high, had been reduced by decay to a thin shell, so fragile that I did not dare insert a hand into the deep, narrow cavity in order to pick up and measure the eggs. All the while that I examined the nest and made notes, the antbird circled close around me, voicing a churred *per-r-r-r* punctuated with a higher, sharper note. Once it tried to lure me away by approaching within arm's length and then walking in front of me with little, mincing steps. When finally, having completed my note-making, I walked off, the parent followed for a yard or two. Then at once it went to look into the stump to see whether its eggs were still there. It made a second examination, then while I stood watching a short distance away it returned to incubate. Rarely have I seen a bird evince more obvious concern for the fate of its nest.

Setting up a blind, I spent two whole mornings and all of an afternoon studying the antbirds' mode of incubation. The sessions on the eggs were amazingly long even for antbirds, which as a family sit for longer periods than songbirds. One morning a parent incubated continuously from 6:25 to 12:04—nearly six hours. On another morning I timed a session which lasted four hours and four minutes. These were long fasts for a small bird. Afternoon sessions were shorter, but one was continued for about three hours. Yet I never saw one parent replace the other. Sometimes after sitting for hours the bird would go off, leaving the eggs unattended. At other times the mate would come and call the sitting bird from the nest, then both would fly away together. In either case, the eggs might be neglected for periods ranging from five minutes to an hour and a half. Often the bird returning to the nest brought a rootlet or fiber to lay beneath the eggs.

Since I was unable to distinguish the members of the pair, I could not tell whether incubation was performed by the male, the female, or by both sitting alternately. Remembering that Jimmy would permit me to touch him with a stick, I wrapped a little cotton about the end of a long wand, dipped it in paint, and touching the parents as they flitted close around me protesting my intrusion, I placed white stains on one and some vermilion spots on the other. Continued watching of the marked birds left no doubt that both male and female took turns warming the eggs, as seems to be the invariable procedure in the antbird family. In those species in which the sexes differ in coloration, it is not difficult to convince oneself that the female regularly takes charge of the nest by night. The bird on whom I had placed the white marks sat through the night, hence I inferred that this was the female.

Fourteen days after I found the eggs, I visited the nest by moonlight, and looking into the stump with the aid of an electric torch, I saw a mass of feathers so loosely spread and disheveled that they appeared not to be attached to a living bird. Such complete relaxation of the contour plumage is typical of antbirds sleeping on their nests. The parent with the white marks continued to slumber while the light increased and the woodland birds gradually became active. Even after awakening she would not leave when I bent over her and tapped gently on the side of the stump. Soon weak peepings filtering through the maternal coverlet told me the cause of this increased attachment to the nest. When finally she jumped out, it was to grovel at my feet in realistic "injury-feigning" acts repeated again and again, until I put an end to them by with-

drawing a few paces. Then the parent promptly returned to her newly hatched nestlings. The empty shells had not yet been removed.

The young antbirds had dark flesh-colored skin wholly devoid of down, and the interior of their mouths was orange-yellow. On the second day after they hatched they were fed eleven times between daybreak and noon, seven times by their father and four by their mother. On each visit the parent brought a single insect, which it held in its bill and delivered while it clung inside the stump in an inverted position, its tail in the air. Both parents took turns brooding the nestlings, each of them sometimes sitting well over an hour at a stretch.

When the nestlings were five days old, they bristled with long pinfeathers and their eyes could be opened, although most of the time they drowsed with closed eyelids. Their parents had by now simulated injury before me dozens of times — far more than any other birds I have studied. Yet when a predator arrived their wiles failed to save their nestlings, possibly because it came in the night. I returned on the sixth day after the young hatched to find that their nest had been raided, as happens to the great majority of the nests that one discovers in the tropical forest. But from the tremendous loss of eggs and nestlings one may deduce the pleasant thought that the adults must be long-lived, for otherwise they could not rear enough progeny to replace themselves and their kind would vanish from the earth. It is now nearly nine years since these nestlings were lost, and since then I have not succeeded in finding another nest of the friendly but secretive Bicolored Antbird.

LIFE WITH MOTHER

By MARGARET ALTMANN

Moose & Elk Researcher, Jackson Hole Biological Research Station

This is an orphaned Moose calf in Jackson Hole Wildlife Park; otherwise its mother would not have permitted a near approach.

DEEP IN THE WILLOW-STUDDED DRAINAGES of the Continental Divide country you may be fortunate enough to witness a striking sequence of events, if you can refrain from shouting and letting yourself be seen. Just stand and watch from an overlook point and you may see a big, hulking, cow Moose and her wobbly-legged calf. Newborn, still wet, it is being licked dry by its mother and stimulated by her care and touch. It tries to get up, staggers a few steps and collapses like a toy animal.

Nursing and shielding the calf from cold and intrusion keep the cow busy during the first few days. When other animals or a human being disturb the scene, she will dodge or try to be inconspicuous by lying low and still.

Soon she will have the calf up and around. By this time it can "heel" and it stays close behind her, gamely stalking over branches and ditches in the willow-aspen habitat. Many weeks pass with first shorter and then longer "heeling" expeditions. One day the calf will be led through a shallow stream and soon it swims by the cow's flank through deep water to an island or the other shore. When the cow feeds on algae in a pond, her calf is "parked" on the shore in full sight of the mother.

By now the cow has territorial feelings. She will not tolerate other Moose passing by, sniffing at or staying near the calf. She will walk up to the intruder and with ears folded back, head outstretched forward, indicate that she is going to act. This gesture is so well understood that most animals detour the area. In the rare cases when an intruder does not retreat at once the infuriated cow strikes with her heavy front feet, and even a huge bull Moose or a prowling bear will retreat after a few blows in rapid sequence. I recall one grazing horse, crossing a small island in search of better pasture, that was pursued by an angry cow. A battle in the water ensued. The Moose hit so hard that the horse nearly drowned and when it eventually reached the opposite bank it was a shaking picture of defeat. Campers in the wilderness do well to avoid getting between a cow Moose and her calf, too. It may happen that the youngster walks right up to you or follows you. In a few seconds you will hear a cracking in the thicket as the mother charges up to retrieve her calf. Such a thing can happen easily, for the natural tendency of the calf to heel is easily transferred from the mother to other big creatures. If the cow is killed or lost, the calf will adopt someone else, often to its own great detriment.

Gradually, as the summer progresses, the distance between cow and calf widens. The urge of the calf to explore and play around is not prevented by its mother. It is surprising to see how much leeway she gradually gives to the young one that previously was kept so strictly by her side. The time comes when she patiently waits in the timber while the distant calf, not noticing her departure, suddenly gets scared, sniffs and searches, and with some self-reliant effort finds her tracks. Thus the bond necessary for the protection of the calf is reinforced and adapted.

The habitat changes; the Moose drift up to higher altitudes where there are fewer insects and disturbances, but the area around the Moose calf is still defended and carefully screened by the cow. Now even yet is the calf allowed to meet and mingle with other Moose. When does this exclusive "life with mother" come to an end?

In September, when the rutting season of the Moose begins, the situation changes. The first "stranger" that the calf meets and learns to know is a bull Moose that comes to court its mother. The calf's meeting with the big bull is a turning point in its life. For the first time the cow does not exhibit her territorial defense reaction, and it is obvious to the calf that something is different. Trembling with excitement, it shows signs of curiosity and caution when it sniffs the bull's face. Fortunately the bull at this time is so enchanted by the cow that he is tolerant and friendly to her calf.

The nursing period is tapered off in the fall, but in contrast to many other animals the calf remains dependent on its mother's care for another year. Now a strapping, ungainly youngster, it nevertheless gets guidance and protection, although not always at such close quarters as before. The bond of communication works at a greater distance and brings warning as well as encouragement to the young Moose. Very little vocal exchange is used. The signals are by gesture, posture and gait, some of them only noticeable to the trained eye of a human observer. A lifting of the head, an ear moved forward and one back, can be a warning. Freezing – that is, motionless stance – can be signal for imminent retreat in flight.

A critical time comes for the Moose yearling in spring, when a new calf is born. Suddenly the cow becomes solitary and drives the yearling out of the close circle. This is done in most cases without bodily violence, just by a threatening gesture. The yearling must not come close and bother the newborn calf. After several unsuccessful attempts to break this rule, the yearling becomes resigned and stays in the fringe area, obviously taking its displacement very hard.

Many months later, when other groups of roaming, unattached young Moose drift by, it may join them and start a life of its own. Life with mother has served its purpose.

AQUARIUM PREVIEW!

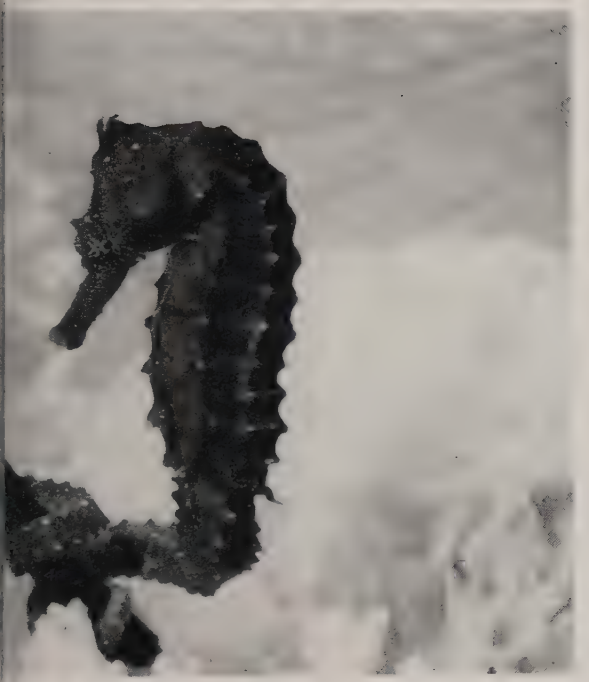
Photos by SAM DUNTON

A FEW OF THE FIRST GUESTS IN STAGE ONE OF THE AQUARIUM

These are typical reef fishes that the Aquarium is getting from Florida and the West Indies. At the top is a Long-tailed Filefish, *Alutera scripta,* one of the largest and handsomest of the Filefishes – despite the fact that it always looks chronically underfed. Below is a Spadefish, *Chaetodipterus faber,* closely related to the Angel Fishes. Next is a specimen of the Nassau Grouper, *Epinepheles striatus,* in one of the commoner of its many color patterns. This species has as many as eight color patterns, and an individual may change several times a minute, as its emotions vary. At the bottom is another Spadefish.

A very prickly customer is the Spiny Boxfish, *Chilomycterus schoepfi,* which is related to the puffers and porcupine fishes. It reaches a length of 10 inches.

This object that look like the tanned skin of some animal, with only part of the hairy side showing, is a Sea Anemone and the small fishes hovering nearby are kinds that are not harmed by its stinging cells.



Seahorses, *Hippocampus hudsonius,* are probably the favorites of most visitors to an Aquarium; certainly they always have fascinated spectators around the tank. The new Aquarium has a nice "stable" of them.

More than 30 different common shrimps are found along the Atlantic coast — and many more rare ones. This shrimp was collected off the Florida coast.

A young Oriental Sweetlip, *Plectorhynchus orientalis,* the first of the species the Aquarium has ever exhibited. It is strikingly marked in rich mahogany, cream and yellow. This one came from the Philippines, from where we are now getting frequent shipments.

Our Hawaiian-hatched Panamanian Poisonous Frogs

By JAMES A. OLIVER

A small Chocoano Indian boy squatted on his haunches beside a fire in eastern Panama. His mind was agitated by feeble twinges of curiosity as he picked up a twig and carefully scraped a tiny object from the edge of the coals. Reaching down beside him he picked up a lightweight, straight-shafted arrow and drilled its point into the soft, shriveled, dark thing salvaged from the fire. After several arrows had been treated, he kicked the small object into the coals with his calloused toes. His weapons thus readied, he went forth on his evening hunt and soon flushed an agouti, one of the succulent rabbit-like rodents of tropical America. He drew his bow slowly and shot with accurate marksmanship and his arrow struck the animal's flank, starting it up like a flash. It ran several yards down the trail and fell over, quivering a moment and then becoming still. The boy picked up his quarry and carried it back to the village. As he walked along he wondered admiringly about the magic on his arrow that had proved its effectiveness once again by quickly killing the agouti before it could run away.

What *was* this magic and what was the object from which it was obtained? Several Indian groups in tropical America have learned that some species of small frogs have a highly toxic skin secretion, and that if the frog is heated or dropped into a fire it will secrete an extra amount. They know that by rubbing this toxin onto the ends of their arrows or blow-gun darts they can quickly and effectively knock out an animal.

The use of the poison has been known for many years but the exact nature of its effective elements is still poorly known. In fact, the skin secretions of the common toads of the genus *Bufo* are much better known. Dr. C. G. Santesson of Stockholm experimented with the poison scraped from blow-gun darts. He found that it produced paralysis of the central nervous system and of the heart, and that very small doses quickly caused death in small mammals by paralysis of the respiratory center, and suffocation.

Another use of this frog's skin secretions has been reported in scientific literature but requires confirmation because it seems highly improbable. This is the "dyeing" of the green Amazon Parrot. As reported by Hans Gadow in 1901, this is done as follows: "The green and blue feathers on the head and neck, or other parts, according to the fancy of the operator, are plucked out, and these places are rubbed with the poison, often simply with the living frog, certainly not with its blood, as is sometimes asserted. This operation may be repeated when the new, young feathers begin to bud. The result is that these appear yellow instead of green, and since the Brazilians, and to a certain extent the Portuguese, are rather partial to these artificially-produced freaks or *contrafeitos* as they call them, the industry is kept up." This report has been repeated in the literature, but seems to be without verification.

The object raked from the fire by the Indian boy was a small frog and, in the case of our Chocoano boy, it was a frog usually referred to as the Panamanian Poison Frog, *Dendrobates auratus*. This frog is a member of a family of interesting, small and colorful frogs inhabiting the leaf-littered forest floors of lower Central and northern South America. In addition to their potent skin secretions many members of the family are noted for their quaint reproductive habits, wherein papa is the nursemaid.

The Panamanian Poison Frog may be just a source of arrow poison to a Panamanian Indian, but in the Zoological Park's reptile collection it is a living jewel of black and green.

The species *auratus* occurs from eastern Panama north into Nicaragua, including the Panamanian islands of Taboga and Taboguilla. It is a black frog with rounded light markings of pale golden-green or gray-green. In the past it has been confused frequently with *Dendrobates tinctorius,* one of the commonest species and one whose scientific name reflects the poisonous nature of the skin secretions. This species is black with light longitudinal stripes. The Panamanian Poison Frog has a head and body length of about one inch — a true giant of the species might reach an inch and a half. Females attain a larger size than males. Unlike most species of frogs, these lilliputians are active during the daytime and are found almost everywhere through the forest, not being confined to the vicinity of streams. The late Dr. E. R. Dunn of Haverford College contributed greatly to our knowledge of these frogs and their relatives. He found them to be most active in the mornings after rains. Dr. Dunn described their call as "a low, soft, buzzing sound."

On the basis of his studies in Panama Dr. Dunn described the mating activities in detail: "The call was often given from a slight elevation, such as the highest point of a fallen mango leaf. There was no calling station: the males moved constantly, calling occasionally between hops. Some moved 30 to 40 feet while we watched them. A calling male was usually followed by several females, who sometimes actually jumped on him. The male seemed aware of his suite and if pursuit lagged would halt longer, become more vociferous, and finally disappear beneath the leaves, closely followed by one female, the others having paused by the wayside." The eggs are apparently laid in small moist or water-filled depressions. The male remains in the vicinity of the eggs and after they hatch, he takes up his role as nursemaid of the tadpoles. He takes the newly hatched larvae on his back and carries them to permanent pools of water, frequently in holes in trees.

A notable thing about the Par
manian Poison Frog is its rep
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Drawing from Breder

This astounding performance was first reported for any frog in 1857 when Dr. Jeffries Wyman observed it in *Dendrobates trivittatus* in British Guiana. Dr. Wyman erroneously believed it was the female who was carrying the tadpoles and that the entire larval period was spent on the back of the parent. Since 1857 many observers have recorded this behavior in numerous species and have established that only the males do the carrying. Dr. Charles M. Breder, Jr., formerly Director of the New York Aquarium, was the first to report tadpole-carrying in the Panamanian Poison Frog. The number of tadpoles carried on the back at one time ranges in different forms from 1 up to 15, although I am sure Dr. William Beebe has observed a higher number. One observer reported that the males take the larvae on their backs whenever the ponds dry up; however, present information indicates that this is not true. Apparently it is only the young, newly hatched tadpoles that are given piggy-back rides to a permanent pool where they complete their development into the adult stage.

Observations on *Dendrobates auratus* indicate that most often a single tadpole is carried at one time – perhaps because of the relatively large size of the tadpole – and that frequently it is carried to a hole in a tree. In Panama, Dr. Dunn saw three frogs, each with a single tadpole on i back, moving about on the trunk of a lar smooth-barked tree. This tree had a number small holes containing water. One of the tadpol carrying frogs disappeared from sight about 4 feet up the tree. Dr. Dunn reported, "All th frogs, in their peregrinations, investigated th water holes and usually went in for a dip. Th lower smaller holes contained no tadpoles, an none were left there by the frogs we watche although tadpole-carrying frogs entered wate twice, one of them sitting with his head out fo six minutes before he emerged still carrying hi single tadpole." The occasional dips in pool doubtless help the gill-breathing tadpoles to sur vive their overland jaunts.

Dr. Theodore H. Eaton, Jr., also recorded in teresting observations on this species in Panama He reported that although the season was excep tionally dry, "water stood in cavities in tree wherever these were exposed to rain, and usually one such hole would contain from one to ten o twelve tadpoles." The smallest amount of wate in which he found tadpoles was about a quarte of a cup, the largest about two gallons. For a month and a half he studied and collected larvae at intervals from a single hole four feet from the ground in the first crotch of a tree. This hole had

approximately the shape and capacity of a quart beaker. During the period of study not less than three, and probably five or six, adult males came to the hole to deposit larvae at different times. He recorded one male who backed down into the water, where he floated vertically with legs spread until the tadpole wriggled free. The male then climbed out of the hole.

There is no special structure or modification that enables the males to carry tadpoles. Apparently the tadpoles simply hang on with their broad, flattened mouths.

The Indians of Central and South America are not the only ones who have made use of the interesting Panamanian Poison Frog. In 1932 Mr. David T. Fullway took 206 of these frogs from Panama to the island of Oahu in the Hawaiian Islands. He liberated them there in the hope that they would become established and help control insect pests plaguing the islands' crops. The frogs have become established but have not spread very far from where they were originally released. They are at least reproducing in sufficient numbers to maintain a thriving colony.

They have not yet proved a boon for the Hawaiian Islanders, but their introduction has been fortunate for us at the Bronx Zoo. We like to exhibit this colorful species in our collection, but it seems to be a short-lived species, apparently having a span of only two or three years. When we need replacements it is not easy to obtain them from their native habitat, and customs clearances add to the cost of getting them to New York. However, with the species established in Hawaii and with a cooperative friend in the person of Mr. Paul Breese, Director of the Honolulu Zoo, we can keep a constant supply of the frogs in our Reptile House. Last month when our frogs got down to only two individuals, a letter to Mr. Breese brought a dozen frogs to us by air mail. These Hawaiian-hatched frogs may not be fugitives from the fires of Chocoano Indians, but they serve to help us tell the story of their colorful relatives from the tropical forests of Central and South America.

Often confused with the Panamanian Poison Frog is* Dendrobates tinctorius, *which is also poisonous but which has light stripes. Both these frogs are hardly more than an inch long.

JUST ARRIVED,

And to be ſeen at Abraham Van Dyck's, in the Broad-Way, near St. Paul's Church, (Price, One Shilling) one of the moſt beautiful Animals, call'd, The

LEOPARD:

HE is adorned all over with very neat and different ſpots, black and white; has large ſparkling Eyes, and long Whiſkers on both Sides of his Jaws, and greedy in catching his Prey by leaping at it. This Leopard is much in Shape, Nature, and Colour, like unto a Panther.

Said Van Dyck has alſo ſeveral other Animals, which will be ſeen at the ſame Time. Gentlemen and Ladies may have a full View of the Leopard, as he is well ſecured with a Chain.

TWO POUNDS REWARD,

RUN-away from the ſubſcriber, living in New-York, a Welch ſervant man named William Walters, by trade a maſon, ſix feet high, thin face, red noſe, fair complexion, ball'd on his head, long eyebrows, came in the ſhip New-Hope, from Briſtol; had on when he went away, a blue jacket, new hat, new ſhoes; he has a wife with him, a Welch woman, both aged about 48 years, and are given much to drink: She had on a brown ſilk gown, black hat and petticoat; very remarkable in her talk, and is ſuppoſed to be gone towards Mr. Griffith's iron works. Whoever ſecures him ſo that his Maſter may have him again, ſhall have the above reward, and all reaſonable charges, paid by

JOHN GIFFORD.

NOTICE is hereby given to the Creditors of the Eſtate of Jedadiah Mills, Clerk of [illegible]

, and the Particulars very ſoon advertiſed; they are to obſerve, that are proper Allowances of Weight ſhall be given in one of the Purſes, ſes, by the aged Horſes, &c, to thoſe of three, four, five, and ſix years et, old.

A Leopard guaranteed to be "well secured with a chain" was exhibited on Broadway in 1768, according to a newspaper advertisement.

Courtesy of The New-York Historical Society, New York City

Long before the Bronx Zoo—

EARLY NEW YORKERS LIKED ANIMAL SHOWS

BY ROBERT & GALE McCLUNG

THE FIRST recorded public exhibit of a caged wild animal in New York was advertised as taking place at the Jamaica Fair, in what is now the borough of Queens. In 1728 the Jamaica Fair was held from May seventh to tenth. For a week before that an advertisement ran in the *New York Gazette* telling about the fair, and saying that there "will be exposed for sale a variety of Goods and Merchandise and several fine horses will there be sold. It is expected that the Lyon will be there to be seen."

From the wording of the announcement it appears that the "Lyon" was already familiar to New Yorkers, and had previously been exhibited in the city. If this is so, the proprietor had relied on word-of-mouth advertising, or handbills, and had not found it necessary to advertise in the newspapers.

Perhaps this Lion was the same one that had made its first appearance in Boston twelve years earlier. If this is the case, he was certainly a veteran actor by the time he reached Jamaica. In the autumn of 1728 the Lion left New York, and next turned up in Albany. The following year he was seen on the road to New London, traveling in an ox-cart. How many small boys of 225 years ago must have shivered with delight and terror to hear the Lion's throaty cough at night as it was taken from one town to another! This, the only Lion in America at that time, was a worthy forerunner of the traveling menageries and circuses that became so famous a century later.

We have no clue as to how this first Lion was brought to America in the first place. It is likely, however, that it was brought in by some enterprising sea captain or by a sailor who purchased it for some trifling amount of trade goods when his ship touched Africa. The animal may have been acquired when it was a cub, for a pet or as a ship's mascot. Perhaps the man who bought it had enough imagination to envision that everyone would be interested in seeing the "King of Beasts."

Practically all of the animal exhibits that appeared subsequently in the eighteenth century were brought to America in this casual manner. Visitors to the docks became accustomed to seeing sailors with gaudy parrots or chattering monkeys on their shoulders. Gradually other exotic mammals and birds began to arrive in New York, brought back on square riggers returning from voyages to South America, Africa or India. In view of all this, it is hard to understand why it was not until July 21, 1791, that another Lion was advertised for exhibit in the city. This one could be viewed, "tractable and docile . . . at the house of Jacob Arden, 22 Gold Street, next door to Mr. Cornelius Roosevelt's china store."

Then, in 1796 a "beautiful African Lion" was to be seen "everyday except Sunday at the Ball-Alley in the Fields next to the corner of Murray Street, in Broadway." The Lion's enterprising proprietor enthusiastically advertised that "this noble animal is between three and four feet high, measures eight feet from nostril to tail, is a beautiful dun color, between 6 and 7 years old, and uncommon strong built. His legs and tail are as thick as those of a common sized ox. He was caught in the woods of Goree, in Africa, when a whelp. He is as tame as any domestic animal whatever." This kind of come-on is in marked contrast to the simple statement that the first Lion "will be there" at the Jamaica Fair. Competition was beginning to be an issue by this time.

The second known species of wild animal to be imported for viewing in New York was a Camel, whose arrival was heralded in the *New York Royal Gazette* on November 12, 1739:

> "Notice is hereby given to all Persons, that there is come to Town, a very Wonderful and Surprizing Creature to all Persons in these Parts of the World; and it is in the Scripture the very same Creature which is there called a CAMMEL. It is impossible to describe the Creature; and therefore all Persons of ingenious curiosity have an opportunity of satisfying themselves.
>
> "The Creature was brought with Difficulty from the Deserts of Arabia in that Quarter of the World which is called ASIA, to New England; a curiosity which never was in this Country, and very likely never will be again. Constant attendance will be given to all Persons desirous of seeing said Creature at the Sign of the Cart and Horse."

The proprietor of the Camel stressed the Biblical connection of his beast because he knew it was smart business to do so. In those days many

The King of the Vultures. | The Ourang Outang; or, Wild-Woman of the woods. | The East-India Porcupine.

MUSEUM & WAX-WORK,

At the EXCHANGE, NEW-YORK,

The Public are informed that this AMERICAN MUSEUM contains an extensive Collection of the Productions of Nature and Art: A which are the following

NATURAL CURIOSITIES.

1. A PERFECT Horn that grew out of a woman's head in this city. It is about five inches in length, and grew from behind the right ear.

LIVING ANIMALS.

2. A Porcupine from the East Indies, the only one ever seen in America: His quills are very long and formidable, and considered as a great curiosity.

3. The Ant Bear, from the coast of Patigonia, a beautiful animal, and the only one ever brought to this country.

4. The American Grey Squirrel, in a machine, in which he grinds pepper for his living. With a number of other animals.

LIVING BIRDS.

5. A King of the Vultures, from South-America: This remarkable bird is about as large as a turkey, the head and neck is beautiful, and resembles the head of an Indian when painted and decorated in an elegant stile.

6. The American Eagle, very large and gay.

PRESERVED ANIMALS.

7. The male and female Ourang Outangs; or, the man and woman of the woods, with a Fetus of the same, perfect in spirits, in a fine state of preservation, from Africa, the greatest natural curiosities in America.

8. The American Buffalo, in his natural standing position, while alive.

9. The Brasil Porcupine.

10. The Armadillo, from Terra Del Fugo.

11. Several American Alligators.

12. Several Monkeys, of different species.

13. The Sloth, from South-America, said to be the most fleshful of all animals.

14. A Lamb, with two perfect heads and necks complete, and with but one body, from

20. The Pinguin, from Falkland Islands.

SNAKES.

21. A large number of remarkable Snakes, among which are, the Yellow Snake, from South-America, 28 feet in length.

22. The American Rattle and Hoop Snakes.

23. The Glass Snake, from South-Carolina.

FISH.

24. A large number of Fish, and parts of Fish, among which are, the Sword, Saw, and Thrasher, which are formidable enemies to the Whale.

25. The Dolphin, Flying Fish, Porcupine Fish, and Sea Horse.

26. An uncommon large Jaws and Teeth of a Shark, with a knife, that was found in him when taken.

27. Corals of various kinds, and a number of Fossils and Minerals.

28. A beautiful collection of Shells, and other Marine productions.

29. A large collection of beautiful Butterflies, and other Insects, from St. Croix, together with a large number of other curiosities, from the Universal Garden of Nature.

ARTIFICIAL CURIOSITIES.

30. A large collection of Mr. BOWEN's celebrated Wax-Figures, (in full stature,) among which are, the American Divine, the Philosopher, the Statesman, the Hero, the Venerable, the Artist, the Beautiful, and the Ugly.

31. The celebrated Aeronaut M. Blanchard.

32. Two beautiful Mandarins, from the East-Indies, dressed in the modern style of that country.

33. A Transparent Monument (placed in the centre of the room) sacred to the Memory of Christopher Columbus, who discovered to Mankind this Western World, on the 12th of October, 1492.

34. Several Chinese Instruments of and other curiosities.

35. An excellent Electrical Machine Apparatus.

40. An Air-Gun, made in this city by American Artist. This Gun, when pro charged, will discharge about twenty b fuccessively, without renewing the charge several times it will discharge a bullet to d ecution at the distance of sixty yards.

41. A collection of Coins and Medals

DESCRIPTION OF THE ROOM.

THE Room in which the MUSEUM contained, is 60 by 30 feet, with an arch feet high, on which is elegantly painted blies, and intermixed with various kind clouds, in some of which are naturally re feated a Thunder-Storm with flashes of li ning. On the walls are elegantly painte large number of Trees, from various par the world; some of which are as large as natural full growth; among which a celebrated Bread Fruit Tree from the Pa Ocean, and the delicious Mangostan from fame country, &c. &c. These trees or p are surrounded by smaller ones of the kind, forming beautiful groves, which a fine effect. Also, on the walls of the are painted a number of beautiful Birds, various parts of the world; among which the Spoon-bill, the Bird of Paradise, Flo ga, and Ostrich; together with a great v ty of foreign Animals, among which are Rhinoceros, Zebra, Hyæna, Leopard, P popotamous or River Horse, Camel Cam pard, Elephant, Lion, &c. &c.

The above Paintings were copied from bell Historical Prints, and are universally known to be excellent imitations, with re to colour & forms; the whole forming a magnificent

This broadside advertised New York's first museum, opened in 1791. Live animals were added to its "Menage" at Pearl Street and the Battery in 1794 and thus it was our first zoo.

Courtesy of The New-York Historical Society, New York City

people heartily disapproved of any activities that were merely for amusement, or for curiosity's sake. Such persons looked askance at animal exhibits, and considered them to be sinful and worldly pleasures. If viewing a Camel could in any way be regarded as a religious pastime, people could gawk to their heart's content without fear of incurring the wrath of God.

Of course plenty of people went to animal exhibits just to be amused. The same year that the Camel was shown, a trained horse was exhibited — the first advertised trained animal act in the city.

> "Soon will come to Town the up right German Hans who understand several languages, the most ingenious Horse that ever was seen in this country. He salutes the spectators . . . if he is ask'd a Question

he answers affirmatively with a Nod, and negatively by shacking of his head; if you show him a Pack of Cards, for every King he makes three Compliments, for the Queens two, for the Knaves none, and counts the Pips of the other cards by striking with his Foot against a Partition; he understands Arithmetick; he feigns himself a Coward if you talk to him of War, by following of his Master as tho' he was Lame; . . . he drinks a Cup of Wine, knows how to distinguish between the good and the bad, and to tell Prices etc. He is to be seen at"

Unfortunately, part of the last sentence is missing, and the location of this extraordinary horse remains a historical mystery.

The next recorded animal exhibit in New York was a monkey, a glowing ad for which appeared in the *New York Post-Boy* on February 25, 1751:

"To be seen at the house of Mr. Edward Willet at White-hall, a creature, called, a JAPANESE, of about 2 feet high, his body resembling a human Body in all parts except the feet and tail: He walks upright, and performs various actions to admiration; such as walking upon a line, hanging and swinging under it, exercising the Firelock, dances to any tune, and sundry other things too tedious to mention. The Sense and Agility of this Creature, renders him worthy the observation of the curious. Attendance is given at said Place every Day in the Week (Lord's Day excepted) from 2 o'clock in the afternoon 'till nine at Night. One shilling."

This talented primate was probably an Indian Rhesus Monkey, as India was the usual destination of American ships to Asia in those days. It was not until a number of years later that American ships did any regular trading with China, Japan or the East Indies.

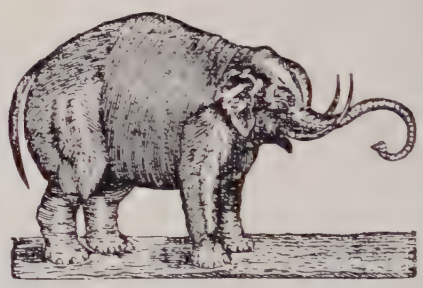
A four-foot-long Alligator was to be seen in July, 1754, and a Buffalo, captured near the Mississippi River, was shown to the public in December, 1757. Buffalo were evidently already quite scarce in most areas east of the Mississippi, although the last wild Buffalo in Pennsylvania were not killed until more than forty years later.

Freaks and monstrosities were sure-fire attention-getters and crowd-pullers in those early days, just as they are today. In February, 1761, the following eye-opening announcement appeared in the *New York Mercury*:

"A surprising Monster was caught in the Woods of Canada near the . . . St. Lawrence, and has with great difficulty been tamed, and brought to the House of James Elliot, at Curler's Hook . . . The Monster is larger than an Elephant, of very uncommon Shape, having three heads, eight legs (*Pudentia* now forces deletion) It is of various Colours, very beautiful, and makes a noise like the Conjunction of two or three voices. It is held unlawful to kill it, and is said to live to a great age. The Canadians could not give it a Name, 'till a very old Indian Sachem said, He remembered to have seen one when he was a Boy, and his Father called it a GORMAGUNT."

Everyone has always loved a mystery, and just what this weird object was, is anybody's guess. What is most interesting about the Gormagunt is that it is the sort of thing that Phineas T. Barnum, the greatest showman of them all, dearly loved, and upon which his fame was founded. Yet the notice for the Gormagunt antedates Barnum and his philosophy that "There's a sucker born every minute" by more than a century. Apparently there has always been a Barnum.

Nearly anything was anti-climatic after the Gormagunt, but those who were content to see more authentic live animal exhibits were able to see a Leopard, "well secured with a chain," on exhibit in 1768 on Broadway near St. Paul's



THE

Elephant,

ACCORDING to the account of the celebrated BUFFON, is the moſt reſpectable Animal in the world. In ſize he ſurpaſſes all other terreſtrial creatures, and by his intelligence, he makes as near an approach to man, as matter can approach ſpirit. A ſufficient proof that there is not too much ſaid of the knowledge of this animal is, that the Proprietor having been abſent for ten weeks, the moment he arrived at the door of his apartment, and ſpoke to the keeper, the animal's knowledge was beyond any doubt confirmed by the cries he uttered forth, till his Friend came within reach of his trunk, with which he careſſed him, to the aſtoniſhment of all thoſe who ſaw him. This moſt curious and ſurpriſing animal is juſt arrived in this town, from Philadelphia, where he will ſtay but a few weeks.—————————— He is only four years old, and weighs about 3000 weight, but will not have come to his full growth till he ſhall be between 30 and 40 years old. He meaſures from the end of his trunk to the tip of his tail 15 feet 8 inches, round the body 10 feet 6 inches, round his head 7 feet 2 inches, round his leg, above the knee, 3 feet 3 inches, round his ankle 2 feet 2 inches. He eats 130 weight a day, and drinks all kinds of ſpiritous liquors; ſome days he has drank 30 bottles of porter, drawing the corks with his trunk. He is ſo tame that he travels looſe, and has never attempted to hurt any one. He appeared on the ſtage, at the New Theatre in Philadelphia, to the great ſatisfaction of a reſpectable audience.

A reſpectable and convenient place is fitted up at Mr VALENTINE's, head of the Market, for the reception of thoſe ladies and gentlemen who may be pleaſed to view the greateſt natural curioſity ever preſented to the curious, and is to be ſeen from ſun-riſe, 'till ſun-down, every Day in the Week, Sundays excepted.

☞ The Elephant having deſtroyed many papers of conſequence, it is recommended to viſitors not to come near him with ſuch papers.

☞ Admittance, ONE QUARTER OF A DOLLAR.——Children, NINE PENCE.

Boſton, Auguſt 18th, 1797.

BOSTON: Printed by D. BOWAN, at the COLUMBIAN MUSEUM Preſs, head of the Mall.

Elephants were more valuable in 1796 than they are today. This one, the first seen in America, came to New York from Calcutta, sold for $10,000, and was widely exhibited.

Courtesy of Peabody Museum

The lower end of Manhattan in 1794. Facing the Battery (at the right of the flagstaff) was the Leopard exhibit; the first elephant was shown back of Government House (center).

Courtesy of The New-York Historical Society, New York City

Church. A year later "a beautiful animal called a TIGER" was to be viewed for six pence at the house of Mr. Abraham De La Montanye in the King's Arms Tavern.

The next ten years were even more sparse for lovers of animal exhibits. Part of the trouble stemmed from the unrest and disorder among the colonies because of their increasing difficulties with England. When the trouble was coming to a head, in 1774, the Continental Congress passed an act which forbade any amusement performances. Then came Lexington, and the shot heard 'round the world. The British occupied New York during most of the Revolution, and the citizens were too concerned with more serious matters to want to attend animal exhibits.

In the fall of 1781 Cornwallis surrendered to George Washington at Yorktown, and the weary years of war were finished at last. In the next two decades animal exhibits and acts flourished and expanded in New York as never before.

Trained animal acts became much more common. Such run-of-the-mill items as performing dogs and horses were prevalent, but more unusual trained birds and pigs were also featured. In 1790, one self-styled bird artist, from Augsburgh, Germany, advertised that he and his troupe of birds had performed before the Emperor of Germany, His Majesty Lewis XVI, and that his proteges could do many wondrous tricks. One canary, for example, was to be seen dressed as a sentry, wearing a grenadier's cap and carrying a gun in its claws.

Not to be outdone, the proprietor of a "Learned Pig" proclaimed that even though "the stupidity and stubbornness of the PIG is proverbial," his intelligent pet was trained so that it "reads print or writing, spells, tells the time of day . . . by any person's watch in company, the date of the year . . . distinguishes colours, how many people present, Ladies or Gentlemen . . . will exercise his talents in arithmetic," and numerous other remarkable feats. This enthusiastic spiel could well be regarded as a forerunner of that offered by the modern circus barker.

Equestrian shows, featuring fancy horsemanship and acrobatics, were becoming very popular with the general public, and during these last decades of the eighteenth century New York was seldom without at least one such show. A generation later this type of entertainment combined with the traveling menageries to form the typically American circus.

During this same post-Revolutionary period New Yorkers saw their first menageries, too. They were meagre showings compared to the New York zoos of today, but still they were the beginnings. The first known menagerie was located at 20 Great George Street, and was advertised for the first time on December 19, 1781. It was open to visitors from nine in the morning to nine at night, and featured "an exhibition of the most beautiful, curious, and extraordinary productions of nature ever before exposed to view in America . . . consisting of birds, reptiles, snakes, and quadrupeds."

Though this proudly presented collection is of special interest historically as the first of its kind, the description of it is so vague that we do not even know if most of the animals were alive or stuffed. The anonymous owner must not have been making much money in any case, for he offered for sale this "superb collection (the laborious researches of many years) at very moderate terms."

In 1789 another collection, from Africa and Brazil, hopefully opened its doors to the public. It featured a "male and female Ourang Outang 'Man of the Woods,' a sloth with sluggish disposition, baboon, monkey, porcupine, ant bear, crocodile, lizard, sword fish, snakes, Tame Tiger and Buffalo, and variety of birds." All these, including the African "Ourang Outangs" which were undoubtedly Chimpanzees, could be seen at 28 Wall Street for five shillings.

It was not until 1794, however, that the first menagerie of any permanence was started in New York. This one was started by Gardiner Baker, the colorful keeper of Tammany's American Museum, which was the first natural history museum in New York, and the second in America. It is hard to imagine that Tammany as we know it today might in any way have been connected with a museum or zoo, but in those days the organization was exclusively cultural. Baker had at first kept a few live animals in the museum, but when the quarters there became too cramped, he established the separate menagerie. It was located on the corner of Pearl Street at the Battery — a very advantageous spot. He enclosed the lot with a "neat fence" and built a number of enclosures. He explained proudly in his advertisements that "the animals could be visited with the greatest safety, as they are all confined in Koops or cages."

Baker was a remarkable man — a resourceful showman and a worthy forerunner of the later, more famous Barnum. He constantly ran titillating ads for his "Menage" and energetically increased his collection at every opportunity. In 1797 he proudly displayed to the interested spectator, for an entrance fee of one shilling, an exhibit that included Wolves, Bears, Opossums, Groundhogs, a Bald Eagle, "moccoco, noble species of Monkey, very large and a small one of a different species, the Mongooz . . . wild hog, of the forests of South America — a very curious animal; it is said that the navle is on the back . . ." The advertisement for this diverse collection ended on a somewhat lugubrious note: "Those who wish to gratify themselves with the sight of these remarkable productions of nature had better make early application, for it is not uncommon for those that are foreign to live but a short time." Mr. Baker did not hesitate to capitalize on the delicacy of his charges. Unfortunately it was Baker himself who lived but a short time, and his well-established menagerie went out of existence after his death in 1799.

In spite of the growing interest in and appreciation of animal exhibits, the cruel sport of animal baiting continued to have its devotees. On April 19, 1797, a bear-baiting was held near "Bunker's Hill, which terminated unfavorably to the sporters; for the bear got loose, and hugged, most fraternally, some of the spectators."

Exhibits of individual animals by transient showmen became quite common. Most of these were displayed at taverns or coffee houses where the exhibitors figured that they were most likely to find crowds already gathered and in a jovial mood that might incline them to pay the necessary admittance fee. In 1782 a Panther was "to be seen at the Old Punch House, next to the Tea Water Pump." Five years later two Camels were exhibited at the stables of Mr. Stephen, adjoining the snuff and tobacco manufactory of William Maxwell on Wall Street. Their owner loudly trumpeted that "The form of these animals is so remarkably curious, and their natural powers (of which the spectators will be informed at the above mentioned place) and their sagacity are so extraordinary that it is presumed all persons hav-

ing a desire of seeing them will be pleased to have their curiosity gratified at the small expense of one shilling." In 1790, Buffalo and Panther were again featured. A male Moose turned up in 1796, and a Cassowary "nine feet high" was to be seen three years later.

Probably the most important single animal to be seen in New York during the eighteenth century was the first Elephant ever to be brought to America. This was a two-year-old female Indian Elephant, purchased for $450 in Calcutta by a Salem, Massachusetts, ship captain, Jacob Crowninshield, and landed in New York on April 14, 1796. The sea captain, who proved also to be a wily Yankee trader, sold this historic animal for a neat profit, as recounted in the *New York Argus* for April 18:

> "The *America* has brought home an Elephant, from Bengal, in perfect health. It is the first ever seen in America, and is a very great curiosity. It is a female, two years old, and of the species that grows to an enormous size. This animal is sold for Ten Thousand Dollars, being supposed to be the greatest price ever given for an animal in Europe or America."

This famous beast remained in New York, and was exhibited on the corner of Broadway and Beaver Street for several months before being taken on tour. In the next several years it traveled through a great part of the young United States, from Massachusetts to Georgia, and entertained countless thousands of curious citizens with its antics.

As the eighteenth century drew to a close, the citizens of New York were showing an increasing awareness of animals and an ever livelier interest in them. Animal exhibits were fast becoming a regular feature of entertainment in the rapidly growing city. These early exhibits are of particular interest because they were the *first* exhibits of the kind. As such they modestly pointed the way to the greater wonders yet to come.

BEHIND THE SCENES

NEWS AND NOTES OF THE ZOOLOGICAL PARK, THE AQUARIUM AND THE DEPARTMENT OF TROPICAL RESEARCH

More Tiger Cubs—Nos. 28 & 29—and We've Run Out of Names

Dacca, the Zoological Park's prolific Tiger mother, produced her ninth litter of cubs on May 3. Two were born, both males, and thus the total of Dacca's progeny reaches 29 since 1948.

It had been hoped that at least one of the new cubs would be a female, to provide future breeding stock, but Dacca has run consistently to males in her last four litters. Her production record is:

Litter	*Males*	*Females*	*Date of Birth*
1	2	2	May 4, 1948
2	1	2	May 6, 1949
3	2	1	May 18, 1950
4	—	4	May 10, 1951
5	2	2	May 1, 1952
6	3	—	May 24, 1953
7	4	—	May 7, 1954
8	2	—	June 3, 1956
9	2	—	May 3, 1957
	18	11	

With her present cubs, Dacca is being her usual solicitous self and so they will be allowed to stay with her. They are among the largest and strongest of her offspring, weighing 3 pounds and 3 pounds 7 ounces respectively. Although Tiger cubs normally stay with their mother in the sleeping den in the Lion House for five or six weeks before gaining enough strength to climb over the 12-inch side of their box and crawl outside, the present cubs managed to make a short excursion into the open within a few days of birth.

Mrs. Helen Martini, who hand-reared Dacca and her two brothers at the time of their own birth in 1944, has always had the privilege of naming Dacca's cubs. She has now, with No. 28 and 29, reached the limit of her inventiveness, and has turned the task over to the Mammal Department. Any suggestions of appropriate names would be welcomed. — W. Br.

"Zoo Trains" Again

Saturday trains from the New England area to the Bronx Zoo are again being operated by the New Haven Railroad, starting at the end of April and continuing to the middle of June.

It took a little more than half an hour for Bilota (left) and Muyoni (right) to make friends in Okapi fashion after they were allowed to run together for the first time on Friday, May 10.

Okapis Together for First Time and All Is Well—So Far

When Muyoni, our female Okapi, arrived from the Belgian Congo last November after a total of 90 days in quarantine, she was so heavily infested with intestinal parasites and so anemic that it was seriously doubted whether she would survive. Although we were anxious to introduce her to Bilota, our hale and healthy male Okapi, it was out of the question to put them together and risk transfer of the infection.

As a result of intensive medication during the winter, Muyoni's condition has improved to such a degree that it is now safe to make her acquainted with her prospective mate. They were turned into the same corral for the first time on May 10 and their behavior is highly favorable.

For the first half an hour Muyoni's attitude alternated between indifference and mild annoyance. A few times she made half-hearted kicks in Bilota's direction when he strolled too close, and once she butted him vigorously with her head. Her petulance then subsided and she allowed Bilota to lick her ears. The two animals now seem completely adjusted to each other.

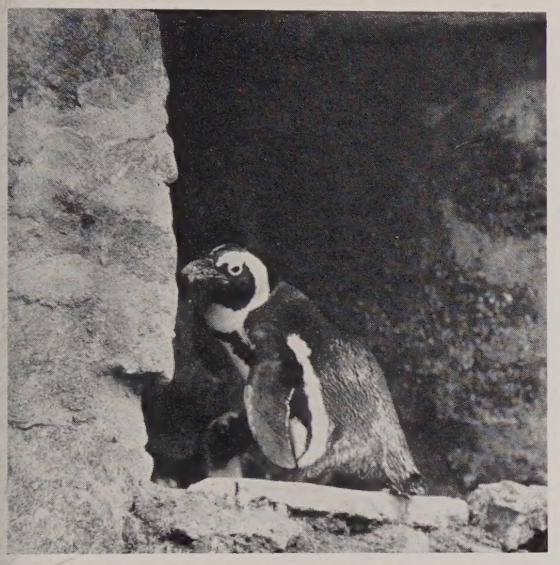
There are two other pairs of Okapis in the United States – in the National Zoological Park in Washington and the Brookfield Zoo in Chicago. The National Zoo has managed to keep its male and female together, after some initial disturbances, but in mid-May the Chicago pair had not been put together. There will now be, inevitably, a race among the three zoological parks to see which will be the first to breed – and rear – a young Okapi. – W. Br.

Head Keeper Scott Supervising Whooping Crane Nesting

By agreement with the Federal Fish and Wildlife Service and the Audubon Park Zoo in New Orleans, Head Keeper of Birds George Scott has been given the job of supervising the rearing of young Whooping Cranes after the hatching of two eggs laid by the pair in Audubon Park. He left New York on May 7 and will stay with the birds until the eggs hatch and the young are well along some two months hence.

The Whooping Crane is close to extinction;

23 birds are known in the wild, plus three in captivity. Last year and the year before, the Audubon Park pair laid eggs and hatched young, but the young cranes died or disappeared shortly thereafter. It will be Mr. Scott's job to see that the youngsters get a good start in life. — W. Br.



Annie, the male Black-footed Penguin who is the sole identifiable survivor of the penguin colony from the old Aquarium at the Battery, will have the honor of snapping at a fish and breaking a ribbon to open the new Stage One building on June 5. Annie, standing at the entrance of a nesting cavity in the Zoological Park, has had some nesting ambitions lately, but not strong enough to interfere with his duty as the official opener-of-the-Aquarium.

Herding the Flamingo collection into the Aquatic Bird House on cool spring evenings has always been a difficult chore, requiring half a dozen keepers waving poles. Curator Conway has now gotten the birds accustomed to one keeper, who steps over the fence and blows a whistle. The birds thereupon turn and file in for the night, promptly and orderly.

PUBLICATIONS OF INTEREST

THE BIRD BIOGRAPHIES OF JOHN JAMES AUDUBON. Selected and edited by Alice Ford. 282 pp., illus. twelve color plates of drawings by Audubon. The Macmillan Co., New York, 1957. $10.00.

Issued as a text for Audubon's monumental "The Birds of America," the Ornithological Biography consists of a series of accounts of the habits of birds and the author's personal experiences with them. First published from 1831 to 1839 and reissued at later dates, they are rich in early Americana as well as attesting the keen observational powers of the great delineator of birds. Eighty of these biographies have been selected and edited by Miss Ford, thus making them readily available to readers who do not have access to the great libraries which possess the original volumes.

The twelve colored plates are from previously unreproduced Audubon originals owned by the Harvard University Library. Without opportunity to check them against the drawings, the accuracy of the color printing cannot be appraised but the Carolina Parrakeet opposite page 172 certainly appears much too blue. Printing, binding and make-up are of a high order, so that this book will make a handsome and useful addition to the nature library. — L. S. C.

NO ROOM FOR WILD ANIMALS. By Bernard Grzimek. 271 pp., 3 maps, 20 illus. W. W. Norton & Co., New York, 1957. $3.95.

Dr. Grzimek is Director of the Frankfurt Zoo, well and favorably known to other zoo men. This is his account of a trip to the Belgian Congo to get animals for his zoo, but it is far more than that: a reasoned plea for more living room for wild animals, shrewd observations on native peoples, sharp comments on hunting and the administration of game laws, a loving account of encounters with animals. Not heavy, but sound and absorbing.

FLEAS, FLUKES AND CUCKOOS. By Miriam Rothschild and Theresa Clay. The New Naturalist Series. 305 pp., 99 photographs, 4 maps, 22 drawings. The Macmillan Company, New York, 1957. $5.00.

Collaboration between the world's greatest authorities on bird-fleas and bird-lice produced this study but it would be a mistake to consider it merely another weighty tome for the specialist. It is a study of bird parasites broadened to include not only parasitism but commensalism and symbiosis. It will not surprise anyone familiar with the New Naturalist Series that it is well-written, well printed and actually enjoyable by the non-specialist.

BUTTERFLIES. By E. B. Ford. The New Naturalist Series. 368 pp., 87 photographs in color, 89 in black-and-white, 41 maps and diagrams. 3rd edition. Collins, London, 1957. $6.00.

Interest in identifying and collecting butterflies is more general in England than in this country, and Dr. Ford's book grows out of and surely has stimulated that enthusiasm. It discusses and illustrates life-size, in color, every known British butterfly and if that limits its usefulness to American readers, they have only to turn to the chapters in the biology of butterflies to have their own interest revived.

PAUL MANSHIP. By Edwin Murtha. Foreword by David E. Finley. More than 220 photographs of sculpture and 8 reproductions of drawings. Biographical chronology, bibliography, catalogue of the sculpture, index of places. The MacMillan Company, New York, 1957. $12.50.

For forty years Paul Manship has held a place of honor in the art of sculpture in America. Early in his career his work showed a decorative style that differed from that of his contemporaries. Influenced by East Indian, Greek, Roman and Renaissance art, he yet maintained an individual and imaginative conception of his own and he, in turn, influenced many of the younger sculptors in America.

Of special interest to members of the New York Zoological Society is his beautiful Paul J. Rainey Memorial Gateway at the main entrance to the Bronx Zoo. Of this masterpiece Mr. Murtha comments: "The greatest imaginative and technical problem that Manship has met in his career . . . the Bronx Zoo Gates are an example of Manship's decorative genius on an imposing scale."

"Paul Manship" is a handsomely designed and beautifully produced book and the many illustrations give a comprehensive and exciting survey of the varied aspects of Manship's work. — H. D. T-V.

VASTNESS OF THE SEA. By Bernard Gorsky. Pp. 305. Illustrations, two maps, no index. Little, Brown & Co., Boston, 1957. $5.00.

An account of four young Frenchmen on the first half of a trip around the world in a small sloop with the sole object of submarine diving and spear-fishing. It is thus the latest of a long list of books with the emphasis placed on mantas, barracudas, moray eels and sharks. It has the great advantage over the others in not claiming to be scientific. Indeed, it even mentions a sea-urchin which shoots its spines! As an adventure story it makes pleasant reading. Incidentally the accounts of the various ports of call, Tangiers, the Canaries, Martinique, Galapagos, the Marquesas and Tahiti form an adequate foil to the never-ending search for and harpooning of vast numbers of various fishes. Especially interesting is the description of the Hermits of the Galapagos Islands. — W. BEEBE.

New Members of the New York Zoological Society

(Between March 1 and April 30, 1957)

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In case you *will* be near at hand on June 15, don't forget that's the day Dr. James A. Oliver, Curator of Reptiles, will lead a Members' Tour through the Zoo starting at 11:00 a.m. It's the third and last Members' Tour this season—and you'll want to be there if you can.

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